2023 NDOT Asphalt Field Technician I/II

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Binder & Emulsion Sampler Recertification

This is a five-year recertification for those who have previously taken the Asphalt Field Technician I & II Training and the Binder/Emulsion Certification. Your responsibility is to read and understand this document and complete and pass the quiz at the end with a minimum score of 80%. After completion, e-mail your completed quiz to amanda.shinkle@nebraska.gov. If you have any questions, feel free to contact any of the Quality Assurance Staff listed below. There is a HMA Reference Guide included for your use.

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Mix Types

We are currently using 5 main mix types and 1 base mix.

SPR: Standard Paving Recycle Mix

High Recycle Mix (Up to 55% RAP)

For Low, Medium, Medium+ Volume Roadways

60% of NDOT Annual Tonnage

Improved In-Place Density

Increased Joint Density

Great Rut Resistance

High Strength Mix

SPH: Super-Pave Heavy – Special Use Mix

Special Use Applications – Intersections and some Urban Corridors

Up to 35% RAP

High Angularity Aggregates

<5% of NDOT Annual Tonnage

SPS: Standard Paved Shoulder Mix

Shoulder Mix
Very Economical
Designed to allow high RAP – Max. 65%

LC: Leveling Course Mix

Leveling Course or SAMI Layer
Fine gradation mix for thin lift of asphalt
Can place 5/8”-1”+ Thick
Higher Binder Content
Helps Prevent Roller Bumps
Up to 35% RAP

SLX: Surface Laminate Xtreme Thin Mix

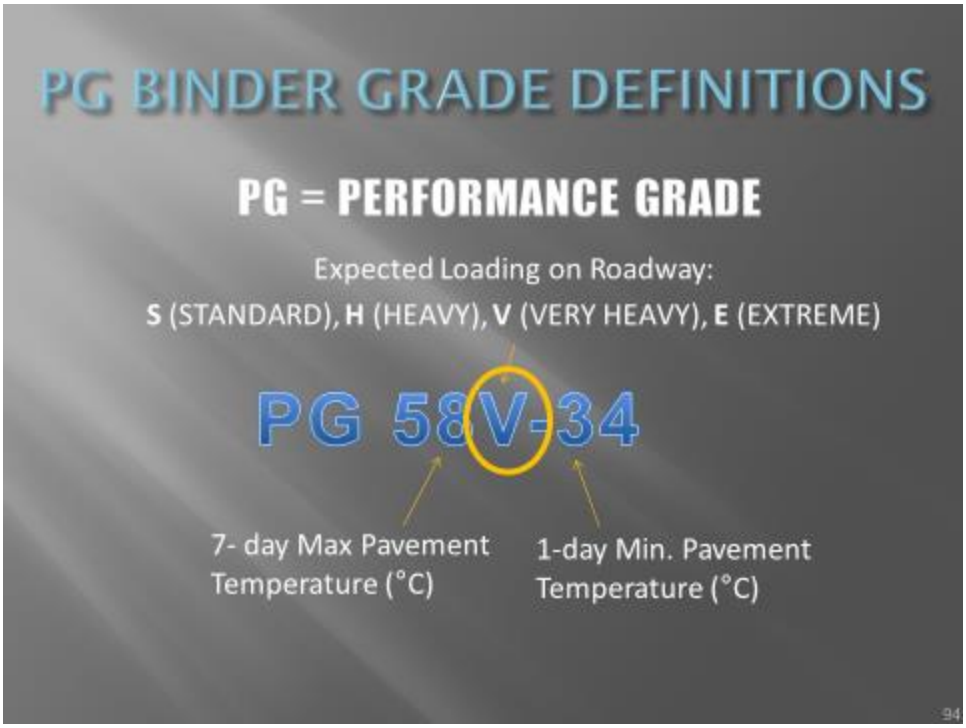
Placed 1-2” Thick (Fine Gradation), now used in many thickness applications up to 6 inch
Min. 20% ¼” Crushed Rock Chips
20-35% Fractionated RAP
Works in all applications

SRM: Special (Warm) Reclamation Mix

Base Mix
Used as base in lieu of HLSS or Cold Foam
Typically 4-5” Lift
Coarser High Strength Mix
35%-65% RAP
0.9% Warm Mix Additive Required
Can compact at lower temperatures

PG Binder/Emulsion/Hydrated Lime - Warm Mix Additives

Projects will typically have the following grades: 58S-34, 58H-34, 58V-34 or 58E-34



With these grades, the contractor will still be allowed to blend grades only when transitioning to an asphalt mixture requiring a different grade of binder and if NDOT is notified and approves it. When going from a lower grade to a higher, the blended material must meet the specifications required by the NDOT Rheology Lab for the first sample. Every subsequent sample must meet the specified grades requirements.

Binder is sampled by the certified contractor representative in observance of NDOT staff in 1 two-quart container after a minimum of 1 gallon is poured to waste. The metal containers are available from the NDOT Supply Base. One two-quart sample is required for every 200 tons or fraction thereof, of each grade of binder used on the project for each supplier – minimum 1 sample for each type of binder used on the project. Containers must be kept dry and free from contaminants. Do not allow spilled material on the container to be cleaned with any type of solvent. Binder samples must reach the Lincoln Bituminous Rheology Lab within 10 days of being sampled. Print the SiteManager/AASHTOWare Project label and include it with the sample.

Emulsion is sampled at a rate of 1 sample for each type of emulsion (for each supplier if more than one) used per project, regardless of the amount used on the project. One sample consists of 1 – one-quart sample taken by the certified contractor representative in observance of NDOT inspection staff. The sample is taken after a minimum of one gallon is poured to waste. The plastic containers are available from the NDOT Supply Base. The containers must be kept dry and free from contaminants. Do not allow spilled material on the container to be cleaned with any type of solvent. Emulsion samples must reach the Lincoln Bituminous Rheology Lab within 5 days of being sampled. Print the SiteManager/AASHTOWare Project label and include it with the sample.

The pay item for Hydrated Lime (used as a Binder Anti-strip agent) has been changed to Hydrated Lime/Warm Mix Asphalt and is paid 1 unit for each 1 ton of Hot Mix Asphalt that contains anti-strip agents.

Random Sampling Schedule (RSS):

If you do not receive a RSS or it is lost or compromised, contact your District QA Manager.

NEBRASKA DEPART

Asphaltic Concrete Pavement

Project No: NH-80-4(139) Name of Road:

Control No. 61429 Asphalt Weight: 65000

Lot Number	Sublot Number	Ton to be Sampled Lot	Ton to be Sampled PJT	8 ft Distance from Edge	12 ft Distance from Edge	14 ft Distance from Edge	16 ft Distance from Edge	Distance to Core	FAA/ CAA Cold Feed	Recuts: Distance to Core	Field Density	Joint Density*	TSR
1	1	611	611	7	4	8	15	-29		94			
1	2	1111	1111	0	10	9	5	-89		9		OUT	
1	3	2707	2707	3	12	2	15	-99		8			X
1	4	3066	3066	3	8	12	15	71		-2			
1	5	4239	4239	1	12	14	11	-80	X	20	X		
2	1	910	5910	0	10	3	0	-1		54		IN	
2	2	1513	6513	0	0	4	1	15		-93			
2	3	2294	7294	6	4	5	15	-43		-3			
2	4	3866	8866	0	12	8	6	-21	X	42	X		
2	5	4339	9339	6	1	9	4	8		-42			
3	1	539	10539	4	2	7	0	-77		39			
3	2	1521	11521	7	8	5	2	-62		-74		OUT	
3	3	2518	12518	4	11	6	0	-35		14			
3	4	3638	13638	7	8	12	12	-50		44			
3	5	4134	14134	4	5	1	0	-65	X	-93	X		
4	1	517	15517	2	8	8	1	-48		-78			

Sublot size is 1000 tons, with a full lot equaling 5000 tons. For Urban projects, see the Special Provisions. All asphalt bag samples, (with the corresponding cold feed samples), and cores delivered to the branch laboratories are required to have individual SiteManager/AASHTOWare Project sample identification included with the sample, along with a copy of the contractor's Superpave software results. The laboratories prefer to have a digital copy of the entire updated Superpave software sent to them each time a sample is delivered.

The "Ton to be Sampled" column indicates, that is the tonnage that should be in the truck from which the sample is taken.

For densities, if the contractor chooses to cut cores for the entire project, they should send the one indicated by the "Field Density" column to the branch lab for each lot. If they choose to use a gauge, they must send all the cores cut from lot 1 to correlate their gauge and the others core they cut from the project. The additional cores should be at a minimum, 1 for every 15 density tests with the gauge. Any density readings taken with a gauge that are below 90% must have a core cut at that location. Additionally, all recuts must be 5 cores and they must all be sent to the branch labs for verification. There are multiple "Distance from Edge" columns for varying width areas and is used to indicate the transverse location on the roadway to take field densities. The "Distance to Core" is the longitudinal distance ahead station, (positive number), or back station, (negative number), to the density location from the original HMA sample station. The "Recuts: Distance to Core" is the longitudinal distance for recuts from the original HMA sample station, if requested by the contractor within one day of the completion of a lot. Use the original "Distance to Edge" value for the recuts. If the contractor requests recuts, they must be used to calculate incentive/disincentive values for the <u>entire lot</u>.

The “FAA/CAA Cold Feed” column indicates the sublot sample that must be submitted to the appropriate NDOT laboratory for verification testing, this sample must also have the accompanying cold feed sample. The Type SPS mixes do not require cold feed sampling.

“Joint Density” indicates the location where an additional density shall be taken for the sublot indicated. It shall be at the same station as the sublot density sample, but shall be taken 1” from the edge indicated on the RSS. “Out” is the shoulder side edge and “In” is the centerline side edge. There is a column on the Superpave software for this information and a separate pay factor is calculated for Joint Density. If the contractor chooses to use a gauge for Joint Densities, they must cut a joint core in Lot 1 to establish a correlation. Additional correlation check cores must be cut every 3rd lot to verify the gauge correlation value and submitted for verification along with the Joint Density submitted for verification testing.

Joint Densities are always taken a maximum 1” from the seam or edge.

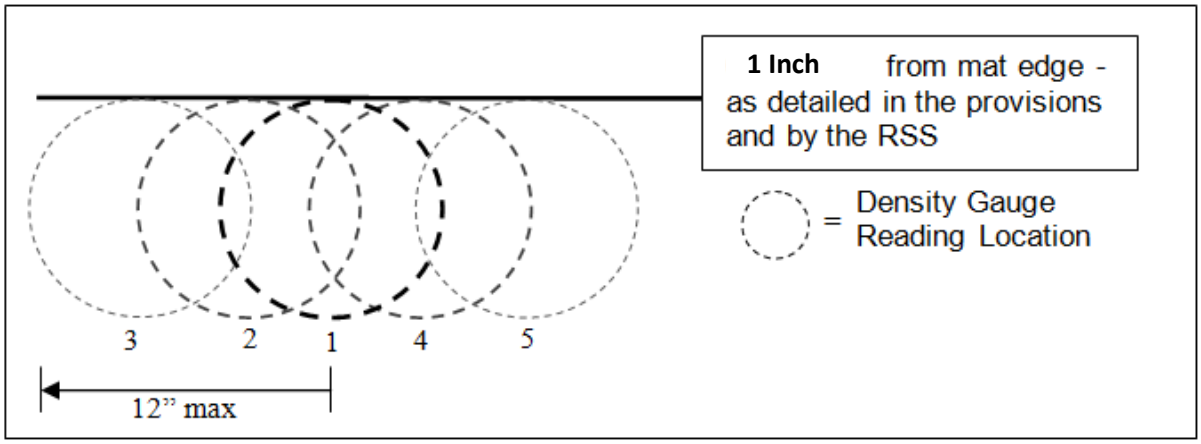


Figure 2: Asphalt density gauge reading pattern less than 6” from mat edge

The “TSR” column indicates when you need to notify the contractor to make Tensile Strength Ratio, (TSR) gyratory pucks to be sent to The Hot Mix Asphalt Mix Design Laboratory in Lincoln. A SiteManager/AASHTOWare Project identification is required to be created by the inspection staff. TSR’s are not required to be made for SPS mix.

Hot Mix Asphalt Reference Guide

I Mix Design Submittal

Submitted to Hot Mix Asphalt Design Laboratory by the contractor on NDOT Mix Design Submittal form – available on NDOT website.

Attachment A: Mix Design Submittal form

Approved Mix Design in Onbase by the Hot Mix Asphalt Design Laboratory Lab - labeled as Approval Letter in NDOT Mat Material Acceptance Documentation – includes Job Mix Formula (JMF) number.

Attachment B: Approval Letter

Any mix design changes shall be submitted on the NDOT Mix Design Submittal form to the Hot Mix Asphalt Design Laboratory Lab thru the consultant.

II Emulsion and Binder Sampling

Emulsion – One 1 Quart sample per type of emulsion per project for each supplier. Delivered to Bituminous Rheology Laboratory within 5 days of obtaining sample.

Binder – One 2 Quart sample per 200 tons binder or portion thereof, per binder grade for each project (for each supplier if more than one). Delivered to Bituminous Rheology Laboratory with in 10 days of obtaining sample.

Both to be tested at the Bituminous Rheology Laboratory in Lincoln.

III Production Sampling and Testing, and Cold Feed Sampling and Testing, and Density

Acceptance Testing – contractor will sample and test all Control Strip samples, unless waived, and all sublot samples from mainline or shoulder paving (not drives or intersections). Sample size should be 75 lbs. – split into 2 representative portions and properly identified. Possession of the verification split sample shall be maintained in a clean, dry, and secure location.

Sample Identification

HMA Samples

One Unique Sample ID# for each verified sublot sample – Cold Feed samples do not have a separate ID#.

2 templates are:

BAF001003 Asphaltic Concrete Sample Submission-Field

BAL003001 Asphaltic Concrete Quality Assurance-Central Lab

Attachments C & D: BAL001003 & BAF003001

Density Cores

One Unique Sample ID# for each verified sublot core or Joint Density core

2 Templates are:

BAF002002 Asphaltic Concrete Core Sample Submission-Field

BAL006001 Asphaltic Concrete Core Testing-Central Lab

Attachments E & F: BAF002002 & BAL006001

All samples shall be marked as Complete (if all results correlate), or Fail (if any test results do not correlate), and authorized upon completion of tests in SiteManager or AASHTOWare Project.

Tensile Strength Ratio Specimens

One Unique Sample ID# for each set of 6 TSR's

2 Templates are:

BAF004001 Asphaltic Concrete Tensile Strength Sample Submission

BAL004001 Asphaltic Concrete Tensile Strength Ratio

Attachments G & H: BAF004001 & BAL004001

Documentation of TSR results to be entered on NDOT Lab Summary Software by Hot Mix Asphalt Design Laboratory in Onbase.

Verification Testing - if contractor runs a Control Strip – all 3 Control Strip samples shall be verified – contractor chooses location within each of the three 200 ton sections. Control Strip must be accepted prior to full production.

If Control Strip is waived, Sublot 1-1 and all sublots identified with an "X" in the FAA/CAA Cold Feed column shall be verified at the indicated tonnage on the Random Sample Schedule (RSS).

Attachment I: Random Sample Schedule

Cold Feed Sampling

Shall be taken to represent the material taken for the HMA sample. Must be taken before the truck with the tonnage shown on the RSS is loaded.

Contractor must take minimum 1 Cold Feed for FAA/CAA testing per lot as identified on RSS.

Contractor may take Cold Feed for FAA/CAA on any other sublots they choose.

Verification Testing – test the same sublot Cold Feed for FAA/CAA as the HMA sample, as indicated on the RSS.

Density Testing

Contractor will choose cores or density gage.

Cores – contractor will test 1 for every sublot plus 1 Joint Density per lot at locations indicated on RSS. Cores shall be properly identified and maintain possession in a climate controlled, secure location after completion of contractor testing.

Verification – 1 per sublot as indicated on RSS, plus 1 Joint Density per lot.

Gage - contractor will cut minimum first 3 cores in first lot and lot 1 Joint Density core, and run gage in same location, as indicated on RSS, for correction factor determination (gage results before cutting cores). Joint Density will have a separate correction factor. Correction factor verification cores will be cut for every 15th density and at the Joint Density in the same lot. Usually cores are cut at 1-1, 1-2, 1-3, 1JD, 4-1, 4JD, 7-1, 7JD, 10-1, 10JD, etc. for verification and gage correlation.

Gage results below 90% are inaccurate and a core must be cut in that location.
Core results below 90% shall not be used to establish or verify correction factor.

Verification – If using gage, every core cut shall be verified.

IV QA/QC Lab Verification Testing

Contractor Test Results

Entered on correct version of NDOT Superpave Software and e-mailed to verification testing laboratory and project staff promptly upon completion of tests (Usually daily).

Attachment J: Superpave Software

Verification Laboratory Test Results

Entered on correct version of NDOT Lab Summary Software and e-mailed to contractor and project staff promptly upon completion of tests (Usually the day tests are complete). The NDOT Lab Summary Software is JMF specific and is provided by the NDOT Hot Mix Asphalt Design Laboratory in Onbase in NDOT Mat Material Acceptance Documentation as Test Summary. This document should be filled out in Onbase and updated as a revision, as results are entered.

Attachment K: Lab Summary Software

Test Results

HMA Sample and Cold Feed Correlating Results

All results correlate – contractor's results are used for pay factor determinations.

Density Correlating Results

Contractor's results used for pay factor determination. Verify correction factors are calculated correctly.

HMA Sample and Cold Feed Non-Correlating Results

An Independent Assurance (IA) Review is required for those tests.

Notify contractor and project staff promptly via e-mail.

Attachment L: IA E-mail example

Check and record all contractor's equipment and procedures used to obtain sample and test material.

Test a biased split sample of material to verify results.

Include contractor and verification lab's IA Review results on NDOT Lab Summary Software.

Notify contractor and project staff of findings and test results via e-mail.

Attachment M: Findings E-mail

Upload all correspondence to Onbase.

Testing of additional sublots in that lot may be required. Can seek guidance from NDOT.

If Air Voids or FAA test results do not correlate, the verification lab's results must be used to calculate pay factors. These values will be required to be entered in the appropriate **Red Box** on the contractor's NDOT Superpave Software.

All other non-correlating results will consider the findings of the IA Review and additional sublot test results to determine which results will be used for pay factors on a case by case basis.

Density Non-Correlating Results

Notify contractor and project staff promptly via e-mail.

The core shall be dried and an IA Review performed at the contractor's lab with the core.

Check and record all contractor's equipment and procedures used to obtain sample and test material.

If the contractor's new results correlate with the verification results, those results shall be used for pay factor calculations. If not, the verification lab's results shall be used for pay factor calculations.

Include contractor and verification lab's IA Review results on NDOT Lab Summary Software.

Notify contractor and project staff of findings and test results via e-mail.

Upload all correspondence to Onbase.

Density Re-cuts

Contractor may request re-cuts on any lot or Joint Density with a pay factor less than 1.00.

Re-cuts must be completed by the working day following completion of the lot testing or Joint Density testing.

Lot density re-cuts are all 5 cores in the lot – **gauge not allowed** – and must use all 5 re-cut cores to calculate pay factors. Must be in location as indicated on RSS – distance from edge does not change from original density location.

Joint Density re-cuts must be a core – **gauge not allowed** – and must use the re-cut to calculate pay factor. Must be in location as indicated on RSS – In or Out does not change from original joint density location.

All re-cut cores are verified at verification testing laboratory.

Referee Testing

The contractor may request Referee Testing on any non-correlating result.

Will be performed at NDOT Laboratory if enough material remains in the verification lab's split HMA sample or Cold Feed sample for the sublot with non-correlating results.

V Final Details

Final Lot

HMA samples, Cold Feed Samples, and Joint Densities for mainline or shoulder paving shall be taken at the tonnage indicated on the RSS.

If one or more HMA samples are taken, a minimum of 3 lot density samples are required to calculate lot average density.

The final sublot tonnage may be greater than normal sublot size if the next sample isn't acquired based on the RSS tonnage.

Project Completion

Review contractor's final NDOT Superpave Software to verify:

Everything filled in correctly

All pay factors are calculated correctly

Red Boxes are filled in if necessary

Reported tonnage is correct

Create a SiteManager or AASHTOWare Project Sample ID# and select the correct template for this sample. This is a field authorized sample.

BAF003001 Asphaltic Concrete Final Summary/Pay Factor-Field

Attachment N: BAF003001

Upload the Superpave Software Excel file to Onbase in NDOT Mat Material Acceptance Documentation with the correct Sample ID# as Superpave Software.

NDOT Contacts:

SiteManager/AASHTOWare Project Support

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402-499-1638

Resources

Standard Specifications for Highway Construction

Sections 500, 1028, 1080, 1081, and 1082

Material Sampling Guide

Sections 2, 3, 4, and 28

Attachments

Attachments - A

State of Nebraska
Department of Transportation
Materials and Research Division

Form must be filled out completely

CONTRACTOR MIX DESIGN SUBMITTAL FORM

NEBRASKA
DEPARTMENT OF TRANSPORTATION

Project No.:		**Mix Type:**	
Project Name.:		**Grading Band:**	
Control No.:		**Binder Type:**	
Contractor:		**Binder Grade:**	
		Compaction Temperature:	

Comments:

Tested by:

Submitted by:

Phone No.:

Fax No.:

Date:

Note: These submittal sheets shall be the first two pages of the submittal package for mix design verification. Attached to these sheets will be your lab worksheets for at least the 4 point design and all other pertinent design information.

Attachments - A

Project No.:
Project Name:

Fill out colored areas only

MIX PROPERTIES AND VOLUMETRICS

Proposed Aggregate Blend

Aggregate Type	%	Pit Location*	1½"	1"	¾"	#4	#8	#16	#50	#80	#200
TOTAL		*minimum breakdown									

*Pit Location = Section, Township, Range

Proposed New Binder and RAP Amounts

Binder in Asphalt Mix	grams	%	
RAP 10-30% Mix	grams	%	
Total Binder in Mix	%		

(Dish)

Wt. Air	
Wt. SSD	
Wt. Water	
Volume	
A(B-C)	
Gmm	Gsb

(Gmm)

Container and Mix wt.	
Container in air	
Mix in Air	
Container/mix in water	
Container in water	
Mix in water	
Mix gravity	
Maximum mix gravity	
*%Pb	Dsb

Ignition Oven Residue

Sample No.			
Sieve	Wt. Ret.	% Ret.	% Pass
1"			
3/4"			
1/2"			
3/8"			
#4			
#8			
#16			
#30			
#50			
#100			
#200			

Ignition Oven Residue:
Calibrated Asphalt Content
Corrected Asphalt Content

% of A.C. in RAP

Pb = ___

N Gsb = ___ Gsb ___ %Gmm

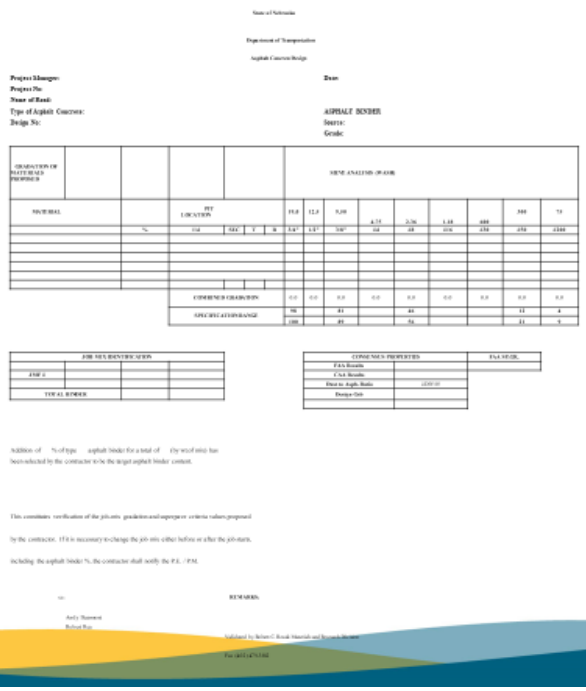
VOLUMETRICS

% Air Voids @ N des	
%VMA	
%VFA	

Concrete Property Results

FAA Results		CAA Results
Sand Equivalent		Flat & Elongated Particles
Methylene Sensitivity (%)		Dust To Asphalt Ratio

Attachments - B



State of Nebraska

Department of Transportation

Asphalt Concrete Design

Project Manager:
Project No:
Name of Rank:
Type of Asphalt Concrete:
Design No:

Date:

ASPHALT BINDER
Source:
Grade:

GRADATION OF MATERIALS PROPOSED						SIEVE ANALYSIS (PASS)								
MATERIAL			PIT LOCATION			19.0	12.5	9.50	4.75	2.36	1.18	600	300	75
		%	114	5414'	T	R	3.8"	1.5"	3/8"	#4	#8	#16	#30	#50	#200
			COMBINED GRADATION			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
			SPECIFICATION RANGE			90		81		44			11	4
						100		81		74			11	9

JOB MIX IDENTIFICATION			
JMF #			
TOTAL BINDER			

CONSENSUS PROPERTIES		FAA MODE
FAA Results		
CAA Results		
Dust to Asph. Ratio	0.0/0.0	
Design Gyr		

Addition of % of type asphalt binder for a total of (by wt of mix) has been selected by the contractor to be the target asphalt binder content.

This constitutes verification of the job mix gradation and superpave criteria values proposed by the contractor. If it is necessary to change the job mix either before or after the job starts, including the asphalt binder %, the contractor shall notify the P.E. / P.M.

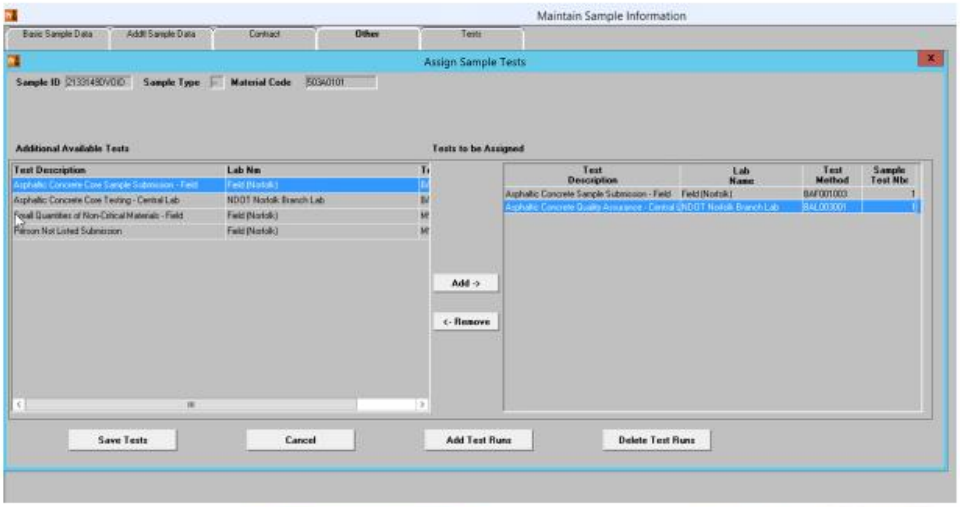
REMARKS:

Andy Sumner
Robert Ruo

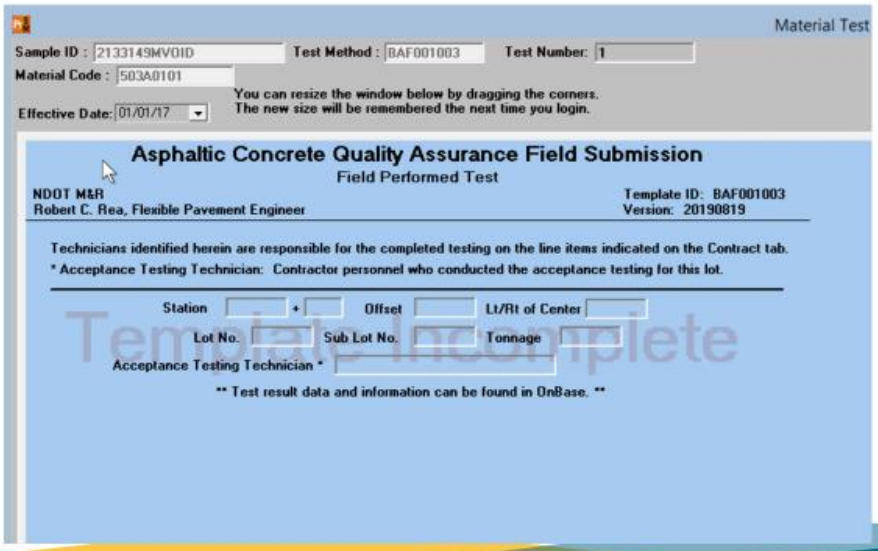
Submitted by Robert C. Rook Materials and Research Engineer

Fax (402) 479-3944

Attachments – C & D



Attachments - C



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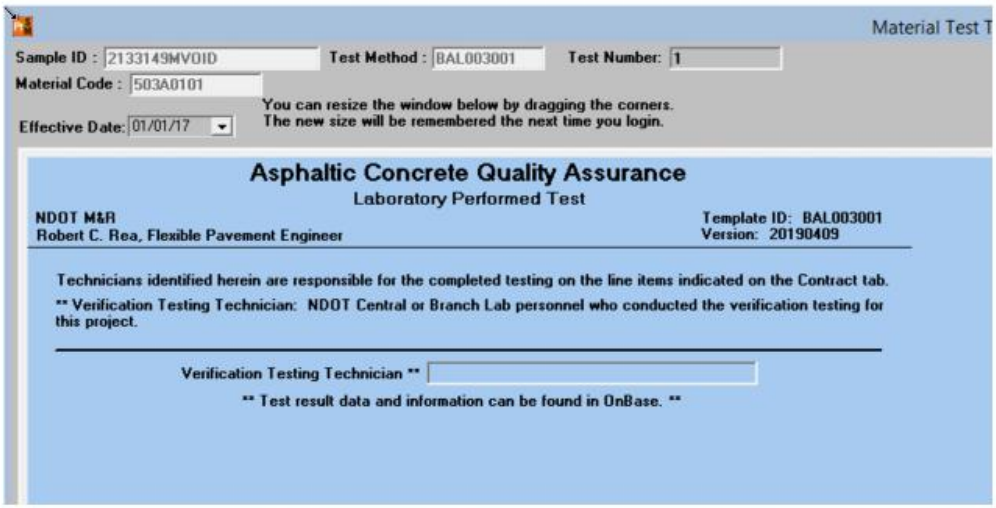
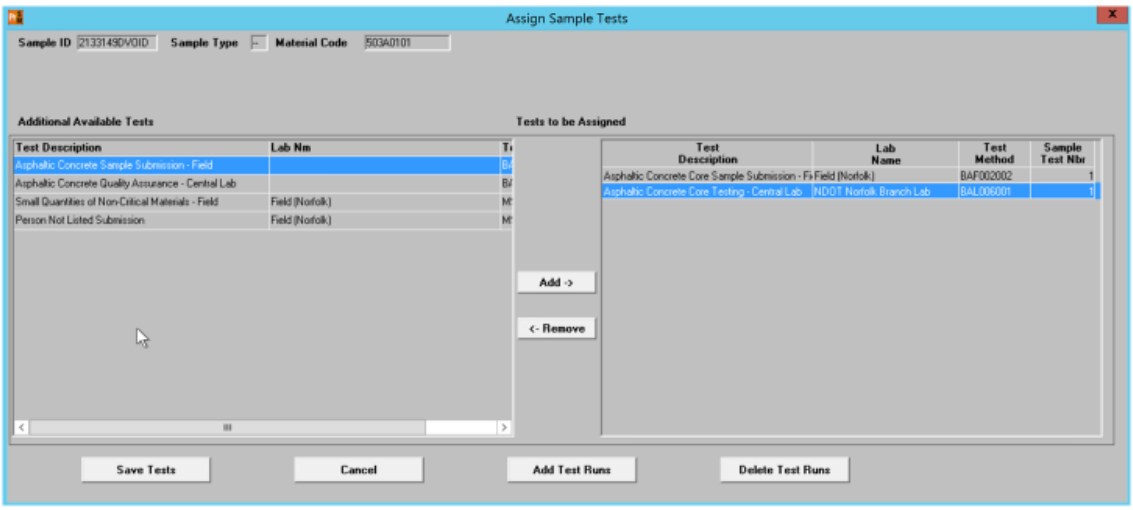


Attachments – E & F



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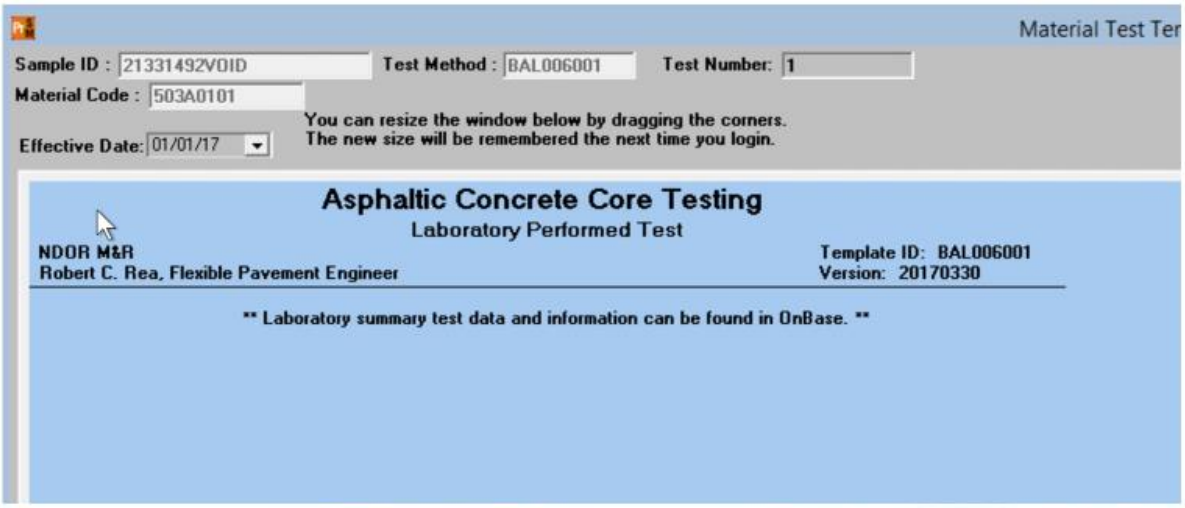

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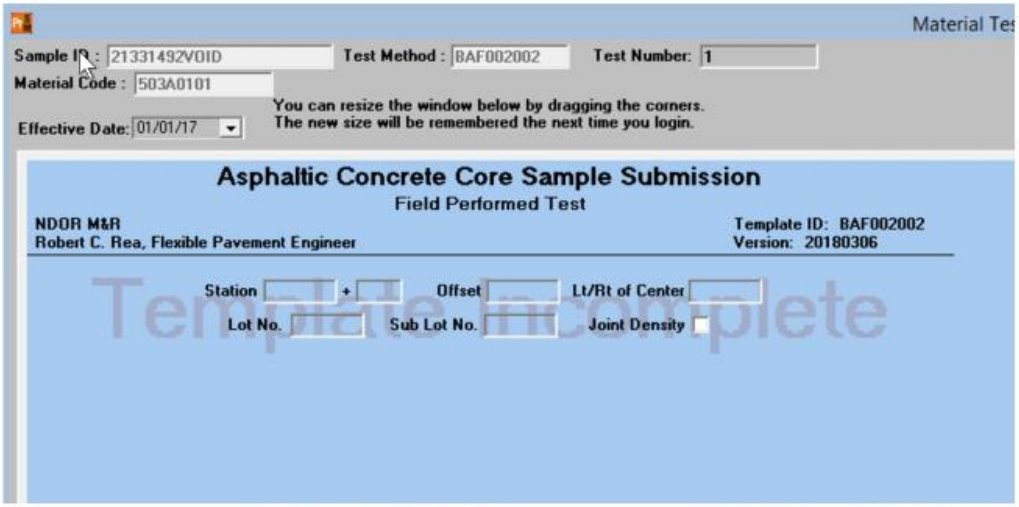
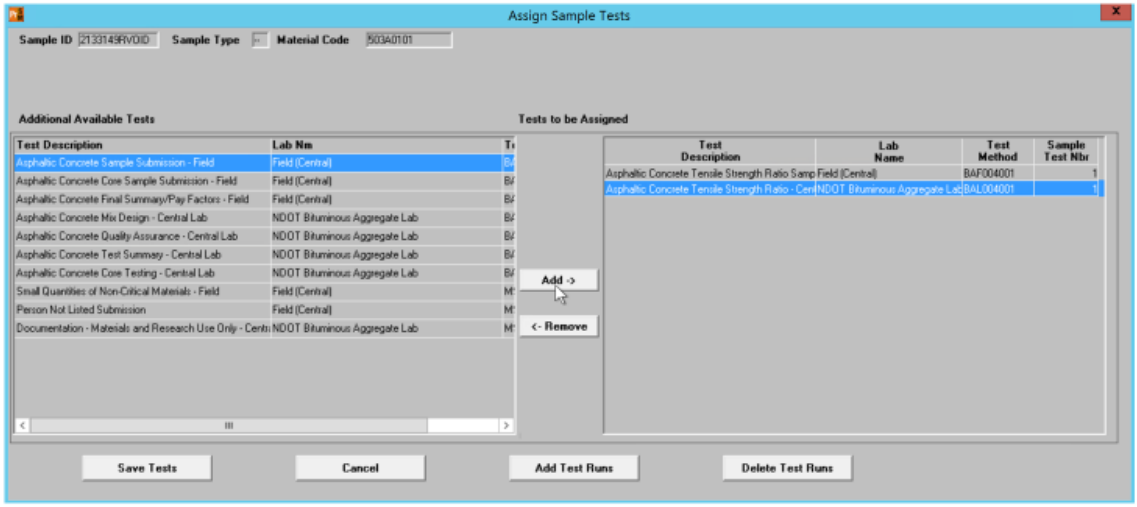
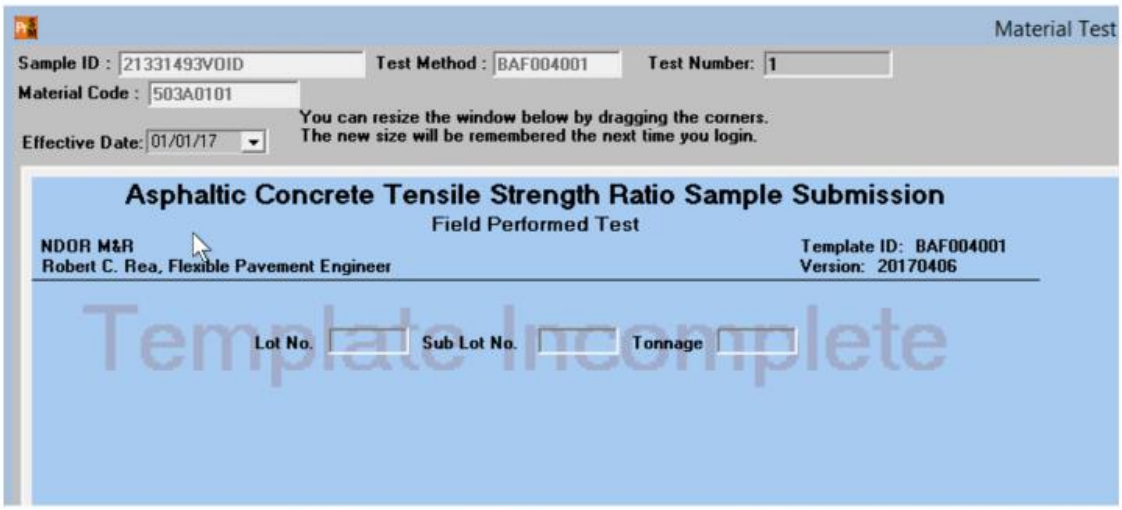


Attachments – G & H



Attachments - G



Attachments - H

Material Te

Sample ID : 21331493VOID Test Method : BAL004001 Test Number: 1

Material Code : 503A0101

Effective Date: 01/01/17

You can resize the window below by dragging the corners.
The new size will be remembered the next time you login.

Asphaltic Concrete Tensile Strength Ratio

Laboratory Performed Test

NDOR M&R
Robert C. Rea, Flexible Pavement Engineer

Template ID: BAL004001
Version: 20170330

** Test data and information can be found in OnBase. **

Attachments - I

NEBRASKA DEPARTMENT OF ROADS

Asphaltic Concrete Pavement Random Sampling Schedule

Project No: STP-59-6(101) Name of Road: JCT. N-57 - JCT. N-15 Page: 1 of 1

Control No. 32126 Asphalt Weight: 32000 Asphalt Type: SPR Lot Size: 5000 Tons

Lot Number	Sublot Number	Ton to be Sampled Lot	Ton to be Sampled PJT	Distance from Edge 8 ft	Distance from Edge 12 ft	Distance from Edge 14 ft	Distance from Edge 0 ft	Distance to Core	FAA/ CAA Cold Feed	Recuts: Distance to Core	Field Density	Joint Density*	TSR
1	1	505	505	8	5	10	0	-47		-35		IN	
1	2	1425	1425	3	7	0	0	51		-68			
1	3	2401	2401	7	0	13	0	-59	X	-27	X		X
1	4	3204	3204	5	10	5	0	94		68			
1	5	4788	4788	2	6	11	0	-80		-8			
2	1	496	5496	6	11	7	0	67		34		OUT	
2	2	1680	6680	5	6	9	0	-40		93			
2	3	2139	7139	3	9	5	0	-41		-54			
2	4	3916	8916	6	9	1	0	-96		-78			
2	5	4566	9566	2	2	8	0	-42	X	-82	X		
3	1	358	10358	6	9	9	0	-91	X	71	X		
3	2	1696	11696	4	3	3	0	-70		92		IN	
3	3	2727	12727	7	4	6	0	-36		53			
3	4	3934	13934	4	8	12	0	44		-40			
3	5	4195	14195	0	7	0	0	20		-33			
4	1	326	15326	0	12	1	0	-74	X	-6	X		
4	2	1963	16963	3	1	8	0	-41		51			
4	3	2757	17757	6	4	4	0	54		68			
4	4	3411	18411	8	6	1	0	65		13			
4	5	4779	19779	6	8	13	0	85		-94		IN	
5	1	371	20371	3	8	7	0	6		49			
5	2	1446	21446	7	2	8	0	-18		-64		IN	
5	3	2855	22855	1	7	8	0	-39		95			
5	4	3168	23168	2	5	14	0	25		-16			
5	5	4294	24294	3	5	11	0	-27	X	1	X		

Lot Number	Sublot Number	Ton to be Sampled Lot	Ton to be Sampled PJT	Distance from Edge 8 ft	Distance from Edge 12 ft	Distance from Edge 14 ft	Distance from Edge 0 ft	Distance to Core	FAA / CAA Cold Feed	Recuts: Distance to Core	Field Density	Joint Density*	TSR
11	1	335	50335	8	1	11	0	-62	X	98	X		
11	2	1501	51501	0	1	14	0	-77		77		OUT	
11	3	2848	52848	2	1	7	0	-40		43			
11	4	3715	53715	0	12	4	0	76		-87			
11	5	4194	54194	4	2	12	0	-8		65			
12	1	349	55349	6	3	1	0	69		4		IN	
12	2	1862	56862	0	6	5	0	81	X	5	X		
12	3	2681	57681	3	10	7	0	-6		17			
12	4	3855	58855	2	10	13	0	36		5			
12	5	4174	59174	7	12	13	0	96		74			
13	1	881	60881	7	7	8	0	59		-4			
13	2	1206	61206	3	1	7	0	11		-47			
13	3	2585	62585	8	12	9	0	-10	X	45	X		
13	4	3319	63319	3	10	2	0	20		-31			
13	5	4690	64690	0	11	2	0	-25		-59		OUT	
14	1	293	65293	0	3	10	0	-47		-93			
14	2	1158	66158	8	7	2	0	30		8			
14	3	2970	67970	2	9	8	0	-54		2			
14	4	3320	68320	3	4	10	0	-93	X	-17	X	IN	
14	5	4598	69598	5	2	7	0	47		-74			
15	1	713	70713	6	0	6	0	87	X	36	X	OUT	
15	2	1713	71713	4	3	8	0	11		-92			
15	3	2115	72115	5	1	14	0	93		-22			
15	4	3390	73390	4	1	11	0	-69		5			
15	5	4760	74760	1	11	6	0	11		-32			

Attachments - I

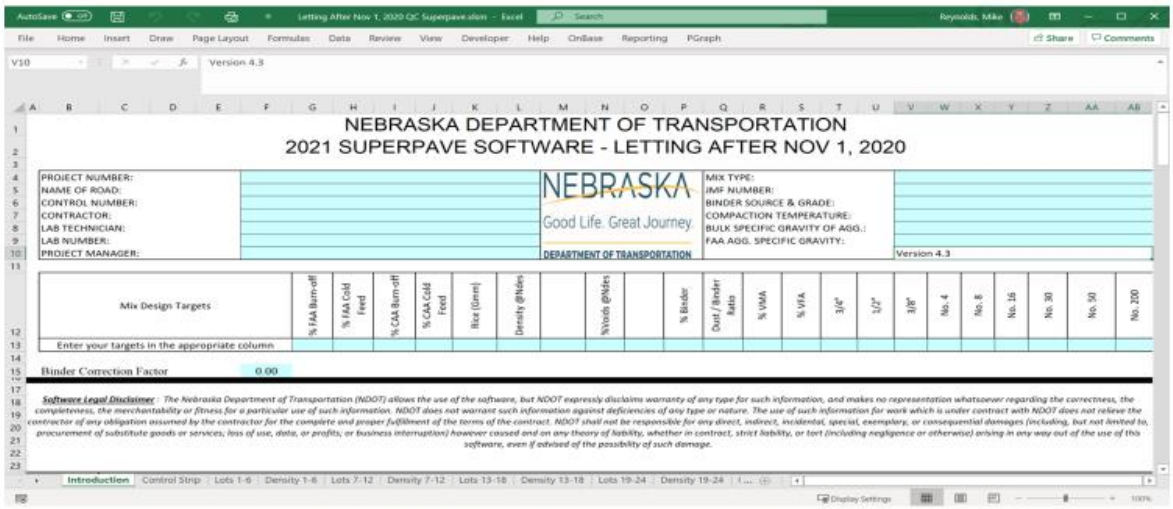
Asphaltic

Project No: STP-59-6(101) Name of Road:

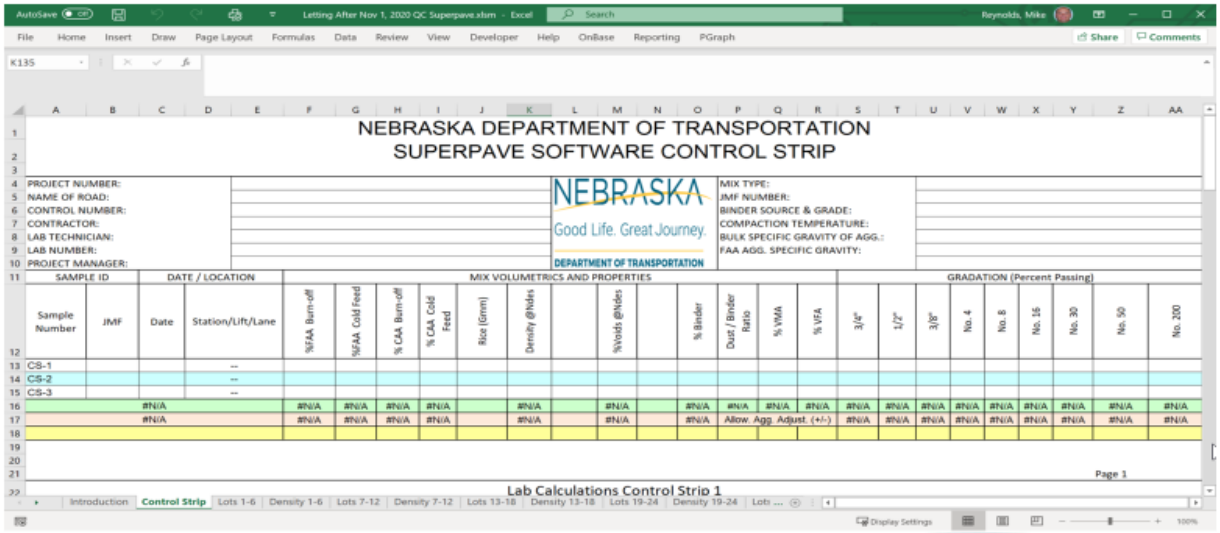
Control No. 32126 Asphalt Weight: 32000

Lot Number	Sublot Number	Ton to be Sampled Lot	Ton to be Sampled PJT	Distance from Edge 8 ft	Distance from Edge 12 ft	Distance from Edge 14 ft	Distance from Edge 0 ft	Distance to Core	FAA/ CAA Cold Feed	Recuts: Distance to Core	Field Density	Joint Density*	TSR
1	1	505	505	8	5	10	0	-47		-35		IN	
1	2	1425	1425	3	7	0	0	51		-68			
1	3	2401	2401	7	0	13	0	-59	X	-27	X		X
1	4	3204	3204	5	10	5	0	94		68			
1	5	4788	4788	2	6	11	0	-80		-8			
2	1	496	5496	6	11	7	0	67		34		OUT	
2	2	1680	6680	5	6	9	0	-40		93			
2	3	2139	7139	3	9	5	0	-41		-54			
2	4	3916	8916	6	9	1	0	-96		-78			
2	5	4566	9566	2	2	8	0	-42	X	-82	X		

Attachments - J



Attachments - J



NEBRASKA DEPARTMENT OF TRANSPORTATION
SUPERPAVE SOFTWARE CONTROL STRIP

PROJECT NUMBER:
NAME OF ROAD:
CONTROL NUMBER:
CONTRACTOR:
LAB TECHNICIAN:
LAB NUMBER:
PROJECT MANAGER:

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MIX TYPE:
JMF NUMBER:
BINDER SOURCE & GRADE:
COMPACTION TEMPERATURE:
BULK SPECIFIC GRAVITY OF AGG.:
FAA AGG. SPECIFIC GRAVITY:

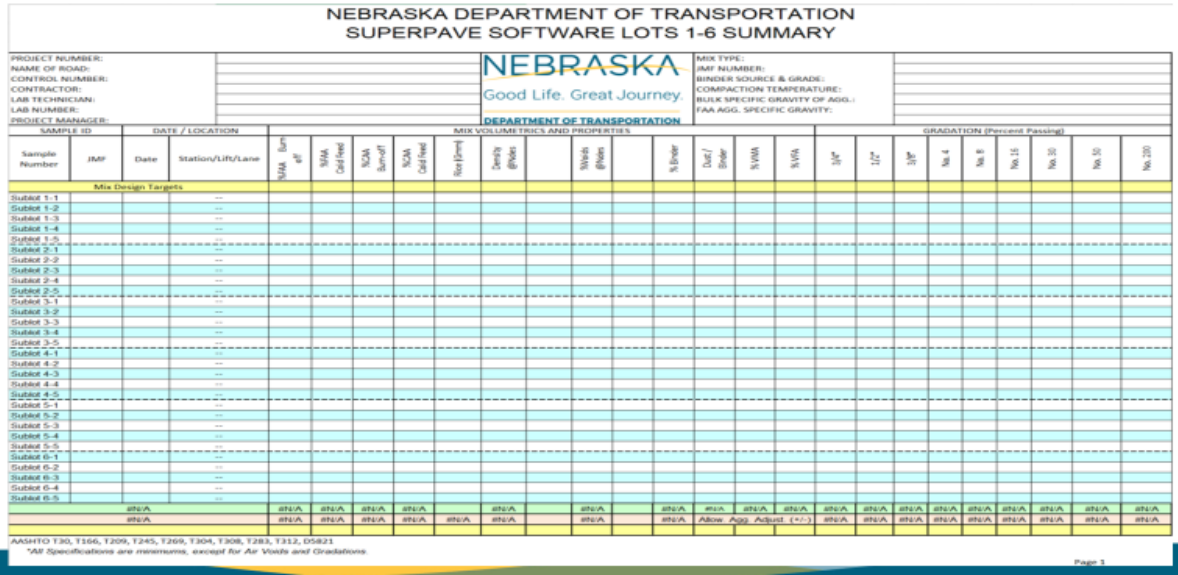
SAMPLE ID		DATE / LOCATION		MIX VOLUMETRICS AND PROPERTIES														GRADATION (Percent Passing)								
Sample Number	JMF	Date	Station/Lift/Lane	%FAA Burn-off	%FAA Cold Feed	% CAA Burn-off	% CAA Cold Feed	Rice (Gmm)	Density @Ndes		%Voids @Ndes		% Binder	Dust / Binder Ratio	% VMA	% VFA	3/4"	1/2"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 200
CS-1			--																						
CS-2			--																						
CS-3			--																						
#N/A				#N/A	#N/A	#N/A	#N/A		#N/A		#N/A		#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A				#N/A	#N/A	#N/A	#N/A		#N/A		#N/A		#N/A	Allow. Agg. Adjust. (+/-)			#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

Page 1

Lab Calculations Control Strip 1

Introduction | Control Strip | Lots 1-6 | Density 1-6 | Lots 7-12 | Density 7-12 | Lots 13-18 | Density 13-18 | Lots 19-24 | Density 19-24 | Lots ...

Attachments - J



NEBRASKA DEPARTMENT OF TRANSPORTATION
SUPERPAVE SOFTWARE LOTS 1-6 SUMMARY

PROJECT NUMBER:
NAME OF ROAD:
CONTROL NUMBER:
CONTRACTOR:
LAB TECHNICIAN:
LAB NUMBER:
PROJECT MANAGER:

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MIX TYPE:
JMF NUMBER:
BINDER SOURCE & GRADE:
COMPACTION TEMPERATURE:
BULK SPECIFIC GRAVITY OF AGG.:
FAA AGG. SPECIFIC GRAVITY:

SAMPLE ID		DATE / LOCATION		MIX VOLUMETRICS AND PROPERTIES														GRADATION (Percent Passing)								
Sample Number	JMF	Date	Station/Lift/Lane	%FAA Burn-off	%FAA Cold Feed	%CAA Burn-off	%CAA Cold Feed	Rice (Gmm)	Density @Ndes		%Voids @Ndes		% Binder	Dust / Binder	% VMA	% VFA	3/4"	1/2"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 200
Mix Design Targets																									
Sublot 1-1			--																						
Sublot 1-2			--																						
Sublot 1-3			--																						
Sublot 1-4			--																						
Sublot 1-5			--																						
Sublot 2-1			--																						
Sublot 2-2			--																						
Sublot 2-3			--																						
Sublot 2-4			--																						
Sublot 2-5			--																						
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#N/A				#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		#N/A		#N/A	Allow. Agg. Adjust. (+/-)			#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

AASHTO T30, T166, T209, T245, T269, T304, T308, T283, T312, D5821
*All Specifications are minimums, except for Air Voids and Gradations.

Page 1

Attachments - J

Lab Calculations 1-1

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PROJECT NUMBER:
NAME OF ROAD:
CONTROL NUMBER:
CONTRACTOR:
LAB TECHNICIAN:
LAB NUMBER:
STATION NUMBER:
DATE:

MIX TYPE:
JMF NUMBER:
BINDER SOURCE & GRADE:
COMPACTION TEMPERATURE:
BULK SPECIFIC GRAVITY OF AGG.:
FAA AGG. SPECIFIC GRAVITY:
LIFT:
LANE:

Gyratory Bulk Gravity

Wt. Air	
Wt. SSD	
Wt. Water	
Volume	0
Gmb	

Maximum Mix Gravity

Cont. and Mix wt.	
Container in air	
Mix in air	0.0
Cont./Mix in water	
Container in water	
Mix in water	0
Mix Volume	0.0
Gmm	

Gmm	Gmb	D/B	%VMA	%VFA

	Ht., mm	Gmb	%Gmm	%Air Voids
N des =				

Fine Aggregate Angularity (FAA)

	Burn-off		Cold Feed	
Cylinder Volume				
Cylinder Weight				
Specific Gravity				
Cyl. & Agg. Wt. #1				
Cyl. & Agg. Wt. #2				
Average FAA				

Coarse Aggregate Angularity (CAA)

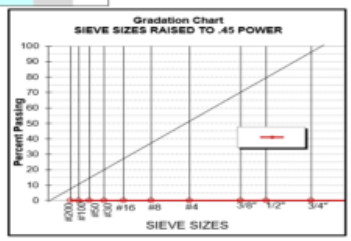
	Burn-off Wt.	Burn-off %	Cold Feed Wt.	Cold Feed %
Sample Wt.				
1 fractured face				
2 fractured face				

Burn-Off Oven Results

Calibrated Binder Content		From Ticket
Correction Factor	0.00	
Total Binder Content		

Grad. Sample Wt:

Sieve	Wt., gm	% Ret.	% Pass.
1"			
3/4"			
1/2"			
3/8"			
# 4			
# 8			
#16			
#30			
#50			
#100			
# 200			



DO NOT fill in unless directed by NDOT.

				One	Two
NDOT Air Void Results:					
NDOT Binder Results:					
NDOT Dust/Binder Results:					
NDOT FAA Results:	Burn		CAA Burn:		
NDOT FAA Results:	CF		CAA CF:		

Remarks:

Page 2

Attachments - K

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NEBRASKA DEPARTMENT OF TRANSPORTATION
INITIAL JOB MIX FORMULA - NOV 2020 LETTING

PROJECT NUMBER:
NAME OF ROAD:
CONTROL NUMBER:
CONTRACTOR:
TEST LOCATION:
PROJECT MANAGER:
DATE RECEIVED:
DATE TESTED:

MIX TYPE:
JMF NUMBER:
BINDER SOURCE & GRADE:
COMPACTION TEMPERATURE:
BULK SPECIFIC GRAVITY OF AGG.:
FAA AGG. SPECIFIC GRAVITY:
Version 2021.2.1

Mix Design Targets	% FAA Burn-off	% FAA Cold Feed	% CAA Burn-off	% CAA Cold Feed	Rice (Gmm)	Density (lb/cu ft)		Voids (lb/cu ft)		% Binder	Dust / Binder Ratio	% VMA	% VFA	3/4"	1/2"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 200
Contractor's Targets																						

Gyratory Bulk Gravity

Wt. Air	
Wt. SSD	
Wt. Water	
Volume	0
Gmb	

Maximum Mix Gravity

Cont. and Mix wt.	
Container in air	
Mix in air	0.0
Cont./Mix in water	
Container in water	0
Mix in water	
Mix Volume	0.0
Gmm	

Gmm	Gmb	D/B	%VMA	%VFA

	Ht., mm	Gmb	%Gmm	%Air Voids
N des =				

Fine Aggregate Angularity (FAA)

	Burn-off		Cold Feed	
Cylinder Volume				
Cylinder Weight				
Specific Gravity				
Cyl. & Agg. Wt. #1				
Cyl. & Agg. Wt. #2				
Average FAA				

Coarse Aggregate Angularity (CAA)

	Burn-off Wt.	Burn-off %	Cold Feed Wt.	Cold Feed %
Sample Wt.				
1 fractured face				
2 fractured face				

Burn-Off Oven Results

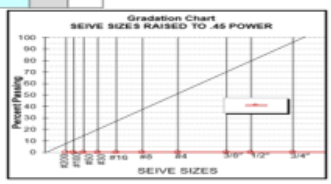
Calibrated Binder Content		From Ticket
Correction Factor		
Total Binder Content		

Aggregate Properties

Flat and Elongated Particles	
Sand Equivalent	

Grad. Sample Wt.:

Sieve	Wt., gm	% Ret.	% Pass
1"			
3/4"			
1/2"			
3/8"			
# 4			
# 8			
#16			
#30			
#50			
#100			
# 200			



Remarks:

Page 1

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Attachments - K

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NEBRASKA DEPARTMENT OF TRANSPORTATION
ASPHALTIC CONCRETE LAB TESTS 1-14

MATERIALS & RESEARCH

PROJECT NUMBER:		MIX TYPE:	
NAME OF ROAD:		JMF NUMBER:	
CONTROL NUMBER:		BINDER SOURCE & GRADE:	
CONTRACTOR:		COMPACTION TEMPERATURE:	
LAB TECHNICIAN:		BULK SPECIFIC GRAVITY OF AGG.:	
TEST LOCATION:		FAA AGG. SPECIFIC GRAVITY:	
PROJECT MANAGER:		YEAR:	

Production Tensile Strength Ratio - Lot	Percent	Production Tensile Strength Ratio - Lot	Percent	Production Tensile Strength Ratio - Lot	Percent

SAMPLE ID		DATE / LOCATION		MIX VOLUMETRICS AND PROPERTIES														GRADATION (Percent Passing)								
Sample Number	LAB # / Field #	Date Received / Sampled	S-M Number / Sta./Lift/Lane	%FAA Burn-off	%FAA Cold Feed	% CAA Burn-off	% CAA Cold Feed	Rice (Gmm)	Density @Ndes		% Voids @Ndes		% Binder	Dust / Binder Ratio	% VMA	% VFA	3/4"	1/2"	3/8"	No. 4	No. 8	No. 16	No. 30	No. 50	No. 200
JMF																									
Contractor 1																									
Contractor 2																									
Contractor 3																									
Contractor 4																									
Contractor 5																									
Contractor 6																									
Contractor 7																									
Contractor 8																									
Contractor 9																									
Contractor 10																									
Contractor 11																									
Contractor 12																									
Contractor 13																									
Contractor 14																									
#N/A				#N/A	#N/A	#N/A	#N/A		#N/A		#N/A		#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
#N/A				#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		#N/A		#N/A	Allow. Agg. Adjust. (+/-)			#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A

AASHTO T30, T166, T209, T245, T269, T304, T308, T283, T312, D5821
*All Specifications are minimums, except for Air Voids and Gradations

Page 1

Attachments - K

LAB TEST 1

MATERIALS & RESEARCH

PROJECT NUMBER:		MIX TYPE:	
NAME OF ROAD:		JMF NUMBER:	
CONTROL NUMBER:		BINDER SOURCE & GRADE:	
CONTRACTOR:		COMPACTION TEMPERATURE:	
LAB TECHNICIAN:		BULK SPECIFIC GRAVITY OF AGG.:	
LAB ID #:		FAA AGG. SPECIFIC GRAVITY:	
DATE RECEIVED:	DATE TESTED:	S-M NUMBER:	SUBLOT

Gyratory Bulk Gravity

Wt. Air	
Wt. SSD	
Wt. Water	
Volume	0
Gmb	

Maximum Mix Gravity

Const. and Mix wt.	
Container in air	
Mix in air	0.0
Const./Mix in water	
Container in water	
Mix in water	0
Mix Volume	0.0
Gmm	

Fine Aggregate Angularity (FAA)

	Burn-off	Cold Feed
Cylinder Volume		
Cylinder Weight		
Specific Gravity		
Cyl. & Agg. Wt. #1		
Cyl. & Agg. Wt. #2		
Average FAA		

Coarse Aggregate Angularity (CAA)

	Burn-off Wt.	Burn-off %	Cold Feed Wt.	Cold Feed %
Sample Wt.				
1 fractured face				
2 fractured face				

Grad. Sample Wt.:

Sieve	Wt., gm	% Ret.	% Pass.
1"			
3/4"			
1/2"			
3/8"			
# 4			
# 8			
#16			
#30			
#50			
#100			
# 200			

Gmm	Gmb	D/B	%VMA	%VFA

	Ht., mm	Gmb	%Gmm	%Air Voids
N des =				

Burn-Off Oven Results

Calibrated Binder Content		From Ticket
Correction Factor		
Total Binder Content		

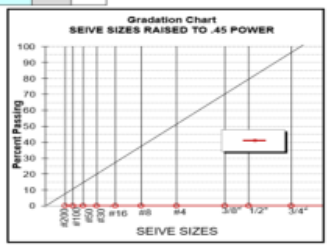
Burn-Off Oven Weights

Empty Basket	
Full Basket	
Weight of Sample	
Weigh Back Weight	

Contractor required to use these results.

				One	Two
NDOT Air Void Results:					
NDOT Binder Results:					
NDOT Dust/Binder Results:					
NDOT FAA Results:	Burn		CAA Burn:		
NDOT FAA Results:	CF		CAA CF:		

Remarks:



Page 3

Attachments - L

Letter for an IA Review

Contractor X,

The Lot 2-4 aggregate gradation results do not correlate with the branch lab's results on the ½" and #4 sieves. Please have your technician check the equipment used for this test. An IA review will be scheduled on a biased sample today or tomorrow. The remaining split samples from Lot 2 will be delivered to the branch lab for possible testing.

Thank you,

Quality Assurance Manager
State Branch Lab

312

Attachments - M

Follow-up Letter

Contractor X,

I performed an IA review on the splitting, washing and sieving in the lab located north of Fremont on 10-21-10. **A #10 or #16 cover sieve is needed for the wash test**. I couldn't find any other issues with the equipment or technicians techniques. The IA sample and subsequent samples are within testing tolerances for gradations.

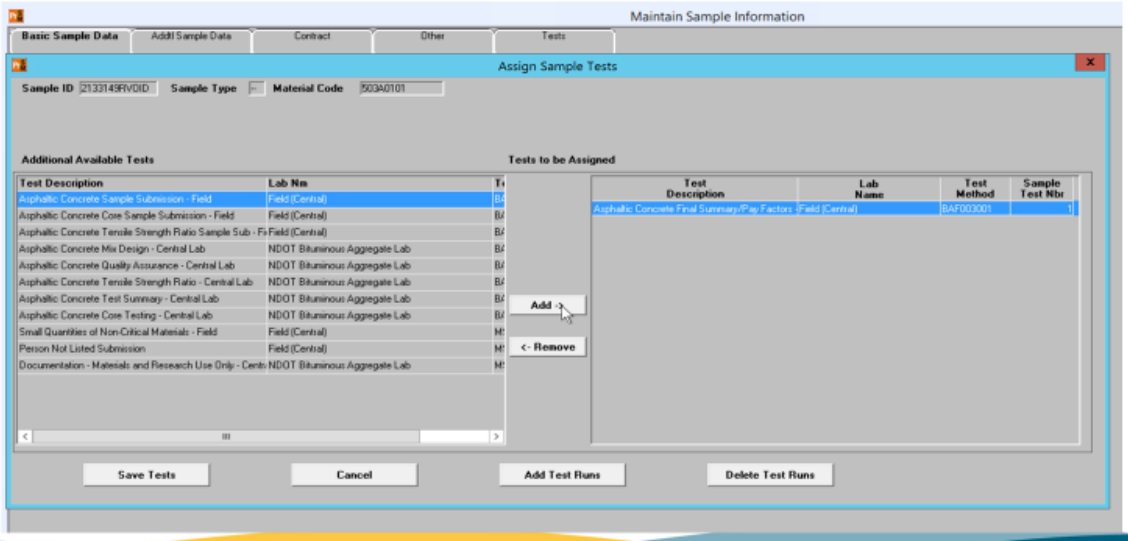
The Norfolk Branch Lab air voids for sample 3-2 do not correlate with your technicians results. Be advised the Norfolk Branch Lab results shall be used for single test results and when calculating running average of 4 tests for air voids. I will request the remaining split samples from lot 3 be delivered to the branch lab for testing. I plan to be at this lab tomorrow for IA review of equipment and procedures related to the RICE test and gyratory compaction.

Thank you,

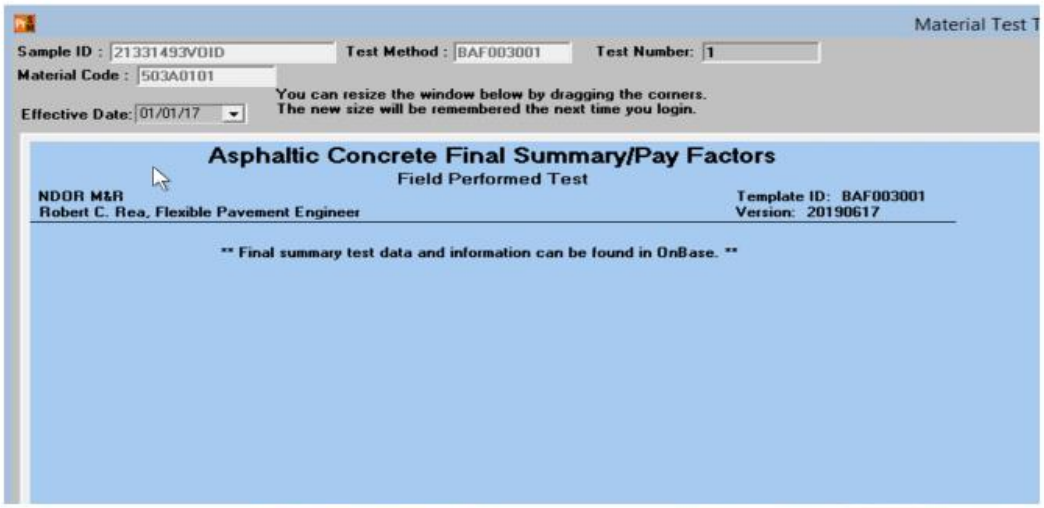
Quality Assurance Manager
State Branch Lab

314

Attachments - N



Attachments - N



2023 NDOT Asphalt Field Technician I/II & Binder & Emulsion Sampler Recertification Quiz

1. When a PG binder or Asphalt Emulsion sample is taken, how much material is required to pass through the sample valve first?
   a. Just until a steady stream is flowing thru the valve
   b. Two Quarts
   c. One Gallon
   d. Two Gallons

2. How often are Joint Densities required to be taken by the contractor?
   a. 1 Joint Density every sublot or 1000 tons.
   b. 1 Joint Density randomly per project.
   c. 1 Joint Density for each Lot or 5000 tons.
   d. 1 Joint Density per day of production.

3. Where is the Type SPS Mix used ?
   a. Mainline Paving
   b. Shoulder Paving
   c. Curb and Gutter paving with Flumes
   d. All the above

4. Are Tensile Strength Ratio (TSR) sample pucks required for a SPS mix?
   a) Yes
   b) No

5. The frequency a binder sample should be obtained is:
   a) every 200 tons of binder used or fraction thereof
   b) every 1000 tons of binder used or fraction thereof
   c) every 750 tons of asphalt used
   d) on every tanker that delivers binder to the project